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NBIA

The State of the Business Incubation Industry

1989

National Business Incubation Association ■ One President Street ■ Athens, Ohio 45701

THE STATE OF THE BUSINESS INCUBATION INDUSTRY 1989

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EXECUTIVE SUMMARY

This report summarizes key findings from a comprehensive survey of business incubators in the United States and Canada. Sponsored by the National Business Incubation Association, this survey is intended to provide vital information on the industry to incubator managers, economic development specialists, policy makers and others involved in the creation, management and operation of business incubators. The report has four major sections:

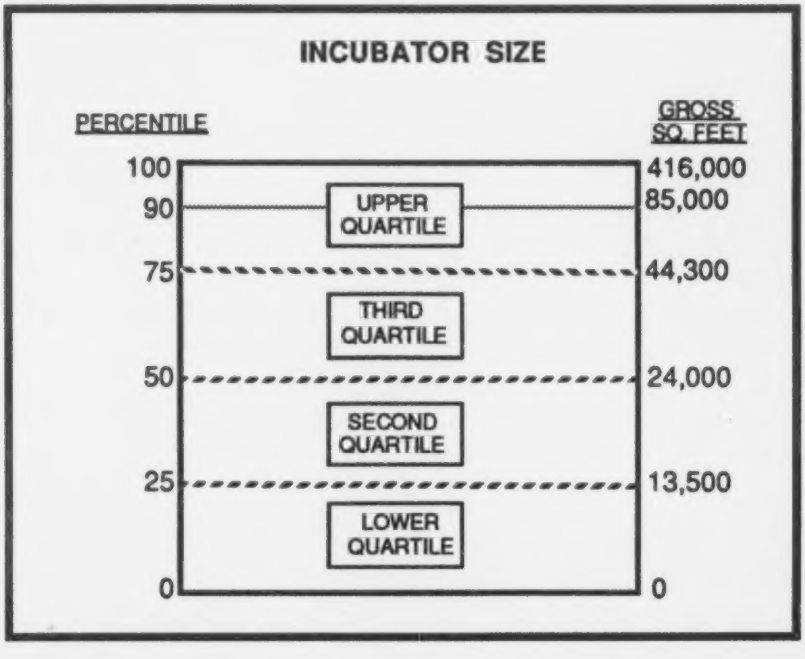
(1) The Emergence of the Incubator Industry
(2) Incubator Services
(3) Incubator Tenants
(4) Common Incubator Problems

This study represents the first in what is expected to be an annual effort to characterize the industry. Selected findings are summarized below.

The Emergence of the Incubator Industry

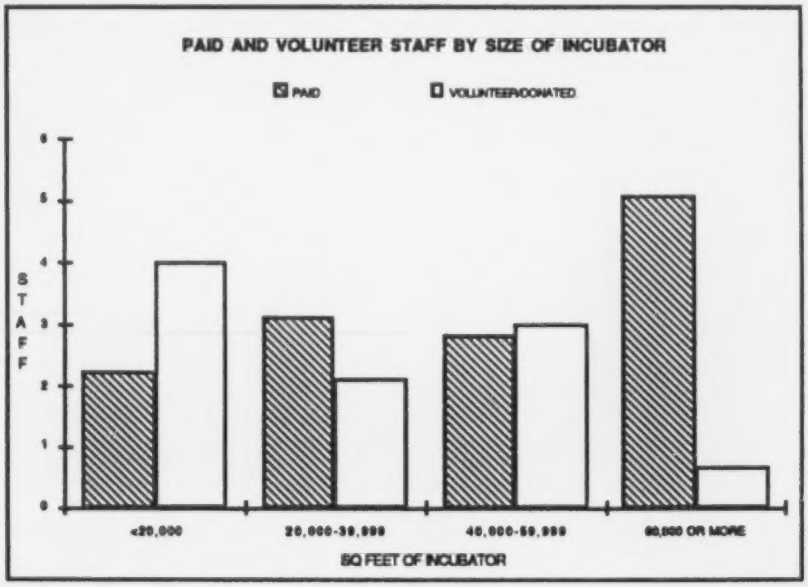
The number of incubators in the United States and Canada has grown from about 50 in 1984 to almost 400 today. Survey respondents came from 38 states and four Canadian provinces. Almost half of the 120 incubators responding to the survey were started within the last three years.

The median incubator had about 24,000 square feet of space. The top ten percent had over 85,000 square feet.



Tenant rental rates included services in 56 percent of the incubators and utilities almost 70 percent of the time. The use of a graduated rent structure designed to encourage tenants eventually to leave the facility occurred at 55 percent of all incubators.

The typical incubator manager is very well educated with diverse professional experience. Almost half had advanced college degrees. Incubators averaged five total staff and three paid employees. Smaller incubators were more likely to rely on volunteer staff than larger ones.



Multiple sponsorship was common, making clear delineation of unique incubator categories difficult. However, three principal motivations for incubator formation emerge from the analysis. These include:

(1) Economic development efforts intended to stimulate the economy, create jobs, and diversify the local economic base.

(2) Commercialization of research and the transfer of technology into new and different commercial applications.

(3) Profits from rents and services and/or equity ownership in or royalty income from small firms, with risk minimization through diversification of investment across multiple small firms.

These three principal motivations drive different entities to participate in incubators for different reasons. Because they are not mutually exclusive, the permutations of sponsoring arrangements are virtually limitless.

There does not appear to be a standard, or prototypical, approach to incubator formation. Rather each incubator appears to have been created in different ways with different sponsors, motivating factors and resources. The presence of multiple sponsoring entities may serve to strengthen an incubator's likelihood of success by establishing a broad base of local support.

Incubator Services

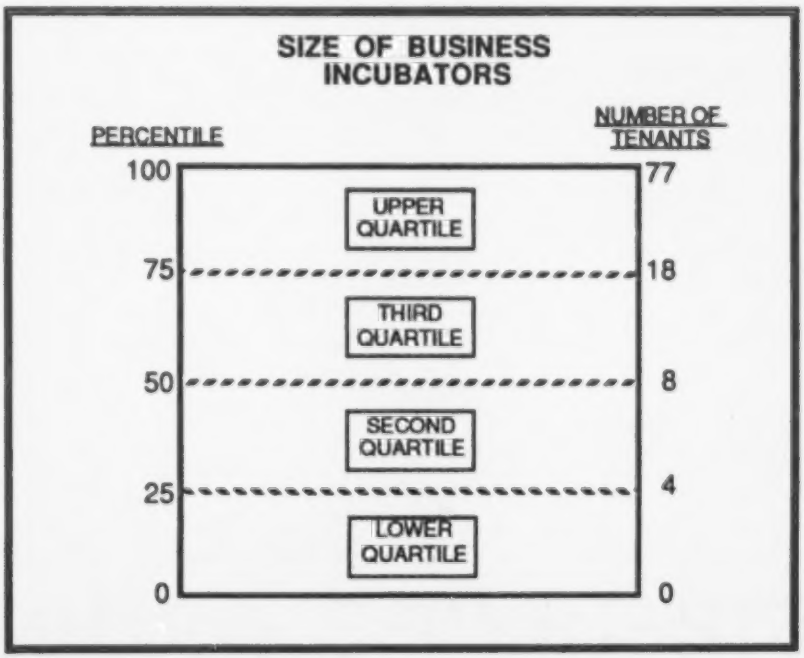
Survey data reflected the wide variety of office services, management and technical assistance available at business incubators. Services such as business plan assistance, accounting and marketing assistance were available at almost all incubators. Less commonly offered services included seed capital funds, tenant revolving loan funds and access to sophisticated computer processing equipment.

Incubator management often provided assistance with business plans and government funding, while technical services such as legal and accounting skills were more likely to be provided by outside providers. The prevalence of assistance from outside providers suggests the presence of extensive support networks for incubator tenants.

Assistance provided by incubator management was the most likely to be included in tenant rent. Tenant use of services and assistance extended into all areas offered with most tenants utilizing more than one type of assistance.

Incubator Tenants

The median number of tenants at respondent incubators was eight. The average (11.5 tenants) was higher reflecting the presence of several large incubators.



On average, for-profit incubators tended to have more tenants and rural incubators less than others.

Over 60 percent of survey respondents had graduates in 1989. This represented an estimated 267 businesses and 1,850 jobs, or 28 new jobs for each incubator with graduates. The average annual graduation rate for incubator tenants was 22 percent in 1989. On average, nine percent of incubator tenants failed during the year. Incubator graduates and failures increased during the first three years of operation, then levelled out. On average, incubators three years or older produced about three graduates per year and had 1.3 failures.

Retail firms, heavy manufacturing and non-profit firms were not permitted in over 80 percent of incubators surveyed. The most common incubator tenants were light manufacturing (26.5 percent) and service firms (25.7 percent). Minority ownership was present 13.5 percent of the time and 21 percent of the tenants were women-owned businesses. On average, tenants had just under six employees while median tenant employment was three. Since entering the incubator, tenants had experienced increased median employment of one and annual sales of $75,000.

Over 60 percent of incubator tenant respondents reported buying and selling goods and services to other incubator tenants.

Common Incubator Problems

Incubators face common problems. One recurring theme was the need for adequate funding. Tenant financial needs ranged from equity capital to short and long term debt financing. Adequate access to capital is an essential component of tenant success and therefore should be a high priority for those organizing and managing incubators.

Similarly, inadequate incubator funding created problems for the incubator manager. Incubator needs included both operating funding and money for facility improvements and maintenance. Continuity of funding was identified as a problem as well. Funding disruptions and underfunding both force the incubator manager to devote more time to raising capital and consequently less time to tenants.

Incubator managers were concerned with the recruitment of good quality tenants. Informal external networks were the most commonly suggested solution. Other survey data support the usefulness of these networks as well. Not only did they provide a source of quality referrals, they were useful in providing access to financial, technical and managerial resources.

Conclusion

This report provides a snapshot of the business incubation industry at a single point in time. It was intended to provide a baseline of reliable industry information and serve as a foundation for measuring industry performance over time.

In subsequent years, the addition of longitudinal incubator data will afford greater depth of analysis. Comparative information on changes in the industry over

time will provide a gauge of the industry's maturation process. The challenge to those involved in the business incubation industry is maintain the flow of information in the years ahead. As such, this report represents the beginning, rather than the end, of what needs to be an ongoing research effort.

INTRODUCTION

The business incubation industry has grown dramatically in recent years. Fueled largely by the economic development efforts of communities facing economic slowdowns and secondarily by universities and others seeking to commercialize research and transfer technology to the private sector, the number of identified business incubators rose from about 50 in 1984 to almost 400 today.

Yet despite this tremendous growth, the business incubator industry is far from mature. Available industry data are extremely limited. The National Business Incubation Association, in its capacity as the industry's focal point, has sponsored *The State of the Business Incubation Industry, 1989* to help incubator managers, economic development specialists, policy makers and others realistically assess the viability and potential for business incubators.

Methodology

In November 1989, comprehensive surveys were mailed to almost 380 business incubators in the United States and Canada. These surveys were extensive, requesting information in three areas:

(1) *General incubator characteristics.* The services offered, types of sponsorships, facility objectives and other organizational characteristics were probed.

(2) *Incubator financial information.* The financial performance of incubators, including revenues, expenses and start-up costs, were collected.

(3) *Tenant information.* Limited information was requested on current incubator tenants, incubator graduates and incubator tenant failures.

Response was voluntary. All potential survey respondents received a letter from the NBIA and at least two telephone calls encouraging them to respond. We received responses to all or part of the survey from 120 incubators. Incubator managers were asked to distribute tenant surveys at their incubators. While tenant surveys were not received from all incubators, responses to the tenant surveys, completed either by incubator managers or tenants themselves, totalled 569.

This report summarizes survey findings. It focuses primarily on general incubator facility and operational factors and tenant characteristics; limited data are available on the financial aspects of business incubators as well.

Limitations

This survey represents an attempt to make substantial incremental gains in the body of research available on the business incubation industry. It does not, nor

was it ever intended to represent a statistically valid sample of all business incubators. However, with data on 120 incubators, it represents one of the largest sources of data ever amassed on the industry. We believe it contains invaluable information for those managing incubators, endeavoring to create them or evaluating their characteristics.

Acknowledgements

The report has been prepared by Scott Schroeder, of BBC, Inc. with assistance from Richard Greenberg, an independent consultant. Sue Coddington of BBC provided key assistance in the data analysis and preparation of graphics.

Substantial assistance was received from Michael Finney and Shavonne Gordon of the Institute for Local Government Administration and Rural Development at Ohio University, who managed data entry and validation. Peter Collins and his staff in the Philadelphia office of Coopers & Lybrand were invaluable in the development, printing and mailing of the survey instrument. Dinah Adkins, executive director of the NBIA, provided coordination and guidance. The NBIA's review committee provided review and comment.

The authors also gratefully acknowledge and appreciate the time and effort incubator mangers put into completing and returning the surveys. Without their assistance, this study would not have been possible. We hope to continue this survey in coming years, to expand and refine the analysis and to create a longitudinal database to provide even more comprehensive industry information.

This study was made possible in part through support provided by the 1804 Fund of Ohio University and the Ohio Department of Development.

SECTION I. THE EMERGENCE OF THE INCUBATOR INDUSTRY

This section documents the relatively recent and widespread emergence of the business incubator industry. It presents descriptive information on the incubators surveyed including their location, age, type of facility and rental rates. The incubator staff and manager are profiled. General scope of services, sponsorship arrangements and primary business objectives of respondent incubators are detailed. Three primary motivational factors contributing to the growth of the industry are identified.

Incubator Characteristics

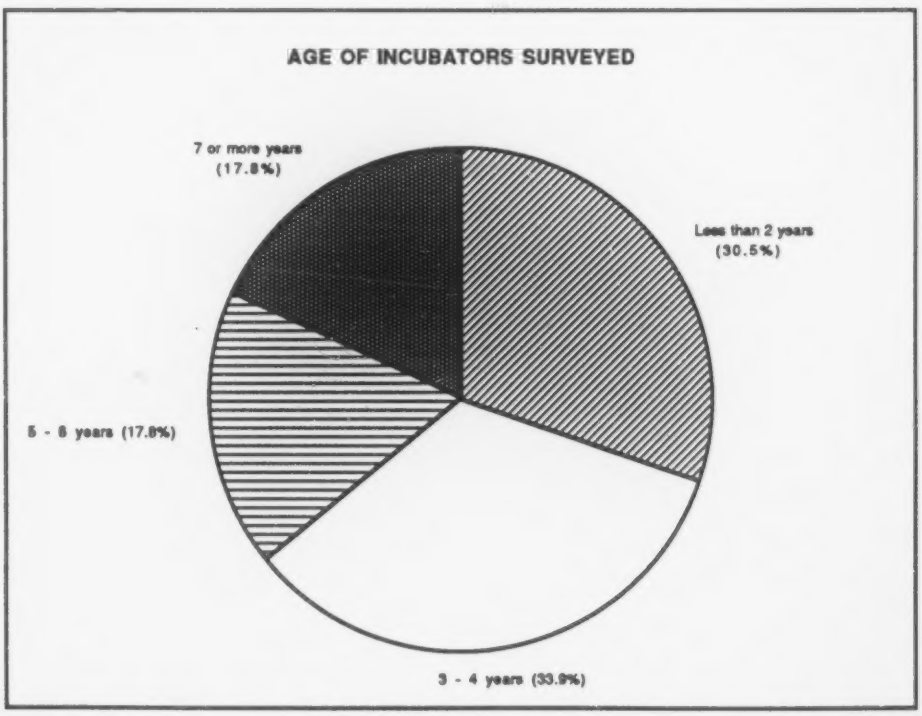
Location. Survey data support the rapid evolution of incubators nationally and in Canada. The 120 incubators providing survey data represented 38 states and four Canadian provinces. Areas with heavy concentrations of respondents include Michigan (10 respondents), Pennsylvania (9 respondents), and New York (8 respondents). Wisconsin, Iowa and Oklahoma were represented six or more times. The figure below shows the distribution of survey respondents by state and province:

LOCATIONS OF SURVEY RESPONDENTS

More than half the incubators in the sample were located in urban areas:

Location	Respondents	
	Number	Percent
Rural	34	28.3%
Urban	63	52.5
Suburban	23	19.2
Total	120	100.0%

Age. The nascent status of the incubator industry is reflected by the number of relatively young incubators. About 65 percent of the respondents had been open four years or less and all but six respondents opened during the 1980's. The distribution of incubator openings since 1980 reflects the relatively high degree of activity in recent years:



Incubator formation in rural areas has been a particularly recent phenomena. Almost 64 percent of rural incubators surveyed were founded within the last three years, compared with 44 percent of urban and 39 percent of suburban incubators.

Breadth of services. Survey respondents provided the range of services characteristic of incubators. Although not every incubator offered all services, over 90 percent offered assistance in all key areas except internal financial assistance:

	Respondents	
Services Offered	Number	Percent
Space for small businesses	115	95.8%*
Shared office services	108	90.0
In-house management/technical assistance	117	97.5
External financing aid	111	92.5
Internal financing	30	25.0

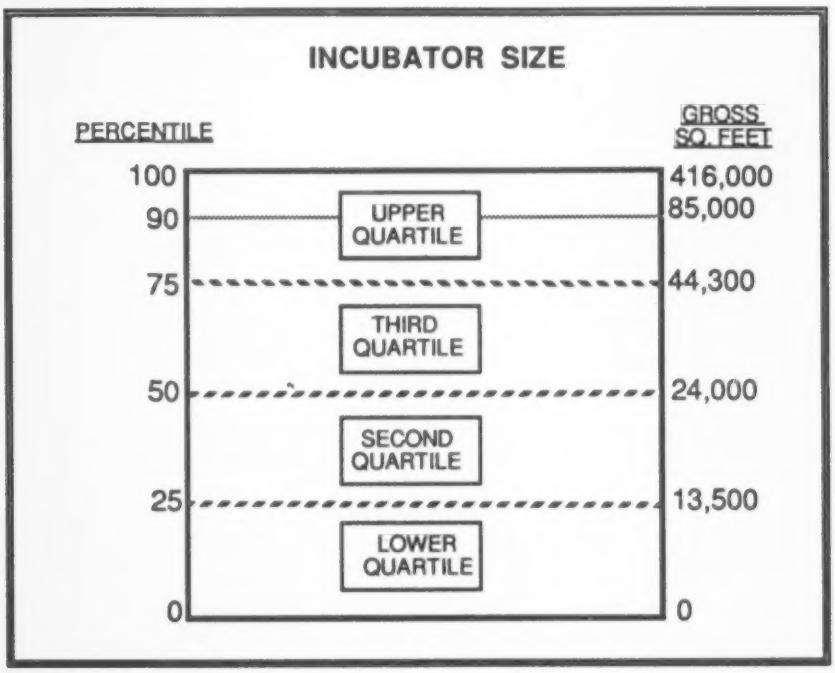
*Response does not total 100 percent because of incubators providing business assistance services without dedicated space (incubators without walls).

Building size. The average gross building size of incubator facilities surveyed was about 43,400 square feet. The median size (or the size of which half the respondent incubators were larger and half smaller) of 24,500 square feet was much lower, reflecting the presence of a relatively few very large facilities. The distribution of incubators by gross building size is presented below:

	Respondents	
Gross Building Size (SF)	Number	Percent
Less than 10,000	15	13.2%
10,000 to 19,999	31	27.2
20,000 to 29,999	18	15.8
30,000 to 39,999	18	15.8
40,000 to 49,999	5	4.4
50,000 or more	27	23.7
Total	114	100.1%*

*Does not add to 100 percent because of rounding.

The upper quartile of incubators had 44,300 square feet or more of space. The top ten percent of incubators surveyed had more than 85,000 square feet:



Administrative and common areas amounted to about 6700 square feet on average, or roughly 15 percent of total space.

Analysis of incubator size by age revealed that newer incubators were frequently smaller than average. While forty percent of all incubators had less than 20,000 square feet, over sixty percent of those started since 1988 were of this size. Conversely, 27.5 percent of the incubators started since 1985 had 60,000 or more square feet, compared with and average of 18.8 percent among all incubators surveyed:

		Year Started				
Square Feet	All Incubators	1989	1988	1987	1986	1985 or older
Less than 20,000	40.2%	58.8%	66.7%	42.1%	16.7%	30.0%
20,000-39,999	32.1	23.5	16.7	36.8	50.0	32.5
40,000-59,999	8.9	5.9	0.0	10.5	16.7	10.0
60,000 or more	18.8	11.8	16.7	10.5	16.7	27.5
Total*	100.0%	100.0%	100.1%	99.9%	100.1%	100.0%

*May not add to 100.0 due to rounding.

Facilities. Seventy percent of the incubators surveyed were housed in existing buildings which had once served different purposes. Of those indicating the building's prior use, factories and warehouses were the most common:

Facility's Prior Use	Percent
Factory	36.5%
Warehouse	22.2
Office	17.5
University building	11.1
Other school building	9.5
Retail	3.2
Total	100.0%

Legal ownership status. Almost 90 percent of incubators surveyed were operated as non-profit entities. About three-quarters were located in buildings with non-profit ownership. Almost 60 percent of those with non-profit operational control were organized under 501(c)(3) statutes.

Rental rate information. Per square foot rental charges ranged from an average minimum of $4.74 per SF to an average maximum of $8.15 per SF. On average, suburban incubators had higher rates than urban or rural incubators. The table below summarizes the distribution of the minimum rental charges available at incubators by location:

Minimum Available Rental Rate Per SF	Location			All Incubators
	Rural	Urban	Suburban	
$2.00 or less	34.5%	19.3%	15.0%	22.6%
$2.01 - $4.00	34.5	29.8	30.0	31.1
$4.01 - $6.00	24.1	15.8	5.0	16.0
$6.01 - $8.00	6.9	24.6	30.0	20.8
$8.01 or more	–	10.5	20.0	9.4
Total	100.0%	100.0%	100.0%	100.0%

Larger facilities tended to have lower mean and median rental rates:

	Minimum Available Rental Rate	
Gross Building Size (SF)	Mean	Median
<20,000	$5.14	$4.10
20,000-39,999	4.84	4.00
40,000-59,999	4.38	3.75
60,000+	4.01	3.37

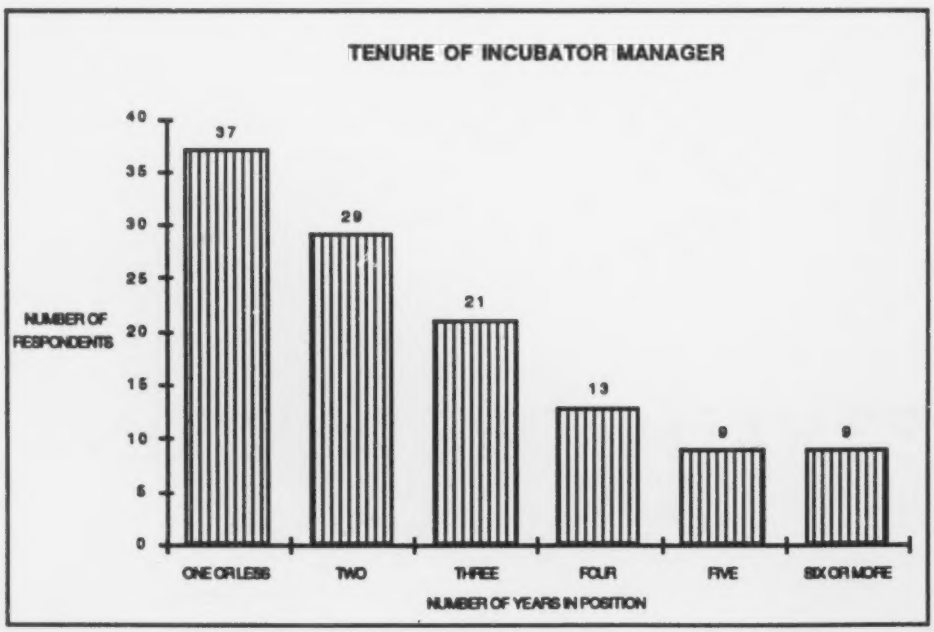
The bundling of certain service charges into rental rates was common:

Services	Percent Bundling Charges Into Rental Rates
Shared services/management assistance	56.4%
Utilities	69.0

Almost 55 percent of incubators had a graduated rent structure that increases over time, designed to encourage maturing companies to leave the facility.

Incubator Manager and Staff

Incubator manager's tenure. Reflecting the number of recently formed incubators, incubator managers tended to be relatively new to their positions. Over half had been in their present position two years or less:



Among incubators over two years old, the average tenure of the incubator manager was about 3.4 years.

Incubator manager's experience. Previous experience was diverse. Almost 60 percent had business management experience, over 42 percent had owned their own business at one time and about 39 percent had prior business consulting experience. Multiple responses were common:

	Respondents*	
Manager's Prior Experience	Number	Percent
Business management	71	59.7%
Business ownership	51	42.9
Consulting experience	46	38.7
Finance	37	31.1
Property management	31	26.1
Legal	8	6.7
Economic development	8	6.7

*Includes multiple responses.

Education levels. Incubator managers tended to be extremely well educated. Ninety percent completed college and almost one-half had advanced degrees:

Highest Education	Respondents	
Level Completed	Number	Percent
High school	12	10.0%
College	51	42.5
Graduate school	57	47.5

The most common advanced degrees were MBA's (21 respondents) and PhD's (12 respondents).

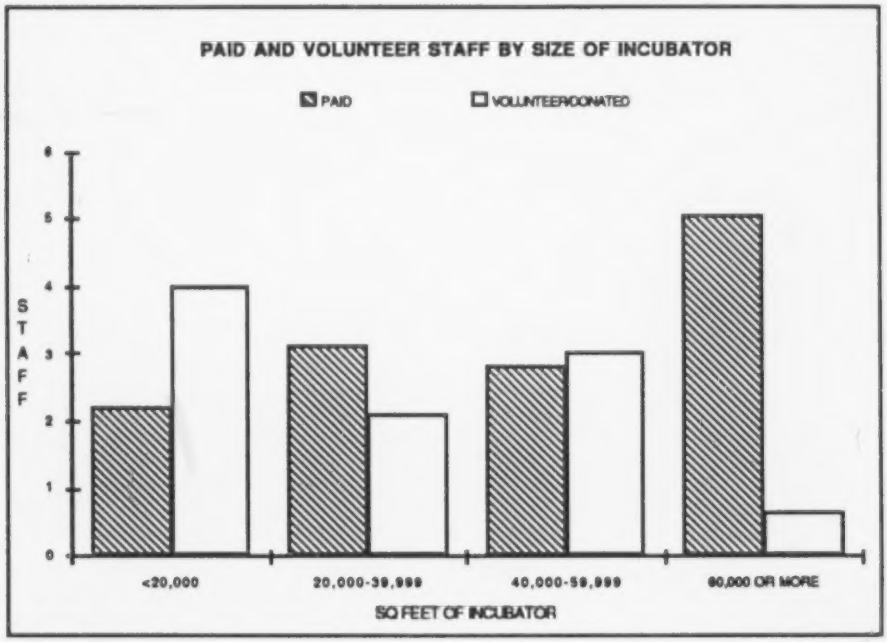
Gender. About three-quarters of incubator managers were male.

Incubator staff. While the largest incubator surveyed had a staff of 24 paid employees, most were much smaller. The average number of paid staff was three and the median response was two. The distribution of incubators by number of paid staff is presented below:

Number of Paid Staff	Respondents	
at Incubator	Number	Percent
None	7	5.8%
One	24	20.0
Two	37	30.8
Three	17	14.2
Four	11	9.2
Five	9	7.5
Six or more	15	12.5
Total	120	100.0%

Total staff. Just over 45 percent of those surveyed reported also using donated or volunteer staff. The average number of total staff at incubators was five. While

the average number of total staff across incubator size categories was relatively constant, smaller incubators relied more heavily on volunteer staff:



Sponsorship and Objectives

Sponsoring organizations. The diverse nature of the incubator industry is reflected in the variety of sponsoring organizations of the survey respondents. While economic development organizations were most frequently represented, many other sponsors were evident. About one-quarter of the incubators surveyed had sponsorship from some type of for-profit company. Multiple sponsorship was frequent:

	Respondents	
Sponsorship	Number	Percent
4 year university	41	34.5%
2 year college	13	10.9
Vocational/technical	15	12.6
Other academic	3	2.5
Economic development agency	76	63.9
JTPA program	11	9.2
Local government	45	37.8
For profit company	30	25.2
None	2	1.7
Other	24	20.2

Analysis of multiple sponsorships revealed that sponsorship combinations were typically distinct, presumably reflecting the unique circumstances surrounding the creation of each incubator. No model or prototypical combination of sponsors was evident. However, cross sponsorships between vocational/technical schools and economic development agencies were common as were combinations of sponsors including both local governments and economic development agencies.

Incubators in suburban locations were less likely than others to have local government sponsorships. Only 18 percent of suburban incubators had local government sponsorships, compared with almost 47 percent of the urban incubators and 35 percent of rural incubators in the sample.

Incubator objectives. Incubators also varied in their primary objectives. Incubator managers were asked to rate the importance of selected objectives for their incubator on a scale of one to five. The mean response for each objective, with one being not very important and five being extremely important, are presented below:

Objective	Mean Response
Create positive environment for start-ups	4.8
Create local employment opportunities	4.5
Contribution to community	4.4
Diversify local economy	4.2
Create opportunities for Minorities/Women	3.2
Technology transfer	3.2
Commercialization of research	3.1
Generate income from tenants	2.8
Neighborhood revitalization	2.6
Investment in tenant firms	2.2
Generate income from intellectual property rights	1.7

Cross tabulations of sponsorship information with primary facility objectives suggest that sponsors vary in their level of interest in different business objectives. For example, incubators sponsored by four year universities indicated that commercialization of research was extremely or very important over 73 percent of the time; for incubators without four year university sponsorship this was true just 28 percent of the time. University sponsored incubators were also more likely to rank technology transfer and the desire to generate income from intellectual property rights more highly than incubators sponsored by other organizations.

Incubators sponsored by for-profits were more likely to rank creating local employment opportunities and making a contribution to the community of lower importance than others. Conversely, this group was more likely to place a high degree of importance on generating income from intellectual property rights and investment in tenant firms, than any other sponsorship category. Incubators sponsored by economic development agencies were more likely to place high importance on diversification of the local economy and neighborhood revitalization, compared with others.

Summary and Implications

Survey data reflect the relatively recent, yet widespread, emergence of business incubators. They are found in all regions of the country and are being created for many reasons and by many entities. Almost half of the 120 incubators responding to the survey were formed within the last three years.

The median incubator had about 24,000 square feet of space. Rental rates included services in 56 percent of the incubators and utilities almost 70 percent of the time. The use of a graduated rent structure designed to encourage tenants to eventually leave the facility occurred at 55 percent of all incubators.

The typical incubator manager is very well educated with diverse professional experience. Almost half had advanced college degrees. About 75 percent were male and 56 percent had been on the job two years or less.

Incubators averaged five total staff and three paid employees. Forty five percent of the respondents utilized volunteer or donated staff. Smaller incubators were more likely to rely on volunteer staff than larger ones.

Multiple sponsorship is common, making clear delineation of unique incubator categories difficult. However, three principal motivations for incubator formation emerge from the analysis. These include:

(1) Economic development efforts intended to stimulate the economy, create jobs, and diversify the local economic base.

(2) Commercialization of research and the transfer of technology into new and different commercial applications

(3) Profit from equity ownership in or royalty income from small firms, with risk minimization through diversification of investment across multiple small firms.

These three principal motivations drive different entities to participate in incubators for different reasons. Because they are not mutually exclusive, the permutations of sponsoring arrangements are virtually limitless.

There does not appear to be a standard, or prototypical, approach to incubator formation. Rather, each incubator appears to have been created in different ways with different sponsors, motivating factors and resources. The presence of multiple sponsoring entities may strengthen an incubator's likelihood of success, by establishing a broad base of local support.

SECTION II. INCUBATOR SERVICES

Incubators differed in the range of services offered and the methods in which they were provided to tenants. Services are broadly categorized into two groups: (1) shared office services; and (2) management and technical assistance. Survey data on incubator services are summarized below.

Shared Office Services

The range of shared office services available at respondent incubators was substantial. A conference room, photocopying, receptionist services and word processing were offered by over 80 percent of all respondents. Over 70 percent of incubators surveyed featured security services, computers, Fax machines, other office equipment and a business library. The percentages of incubators offering specific shared office services is presented below:

Shared Office Service	Percentage of Incubators Offering
Conference room	96.6%
Photocopying	95.0
Receptionist/phone coverage	84.0
Word processing/typist	83.2
Security	77.3
Computer	75.6
Fax machine	74.8
Office equipment/furniture	72.3
Business library	70.6
Audio/visual equipment	65.5
Extra storage	63.9
Bookkeeping	50.4
Group health insurance	12.6

Other services mentioned included janitorial and maintenance services, business planning services, notary services, central telephone system, training, parking, seminars, forklifts, trash pickup, and UPS service.

Management and Technical Assistance

The availability of management and technical assistance is what separates a business incubator from an executive suite or other shared office facility. Incubators surveyed reported a wide variety of available assistance to tenants. These services were offered either by the incubator manager or an outside provider. Tenants paid for services in a variety of ways.

Services available. Table II-1 summarizes the availability of 16 types of assistance at incubators. Almost all incubators (98.3 percent) offered assistance with

business plans. Marketing and accounting assistance were available at almost 90 percent of all incubators. Beyond this, assistance with government grants and loans was available at about three quarters of the incubators surveyed, and legal services, patent assistance, computer training and international trade assistance were present at over sixty percent of incubators surveyed.

Provision of assistance. Assistance was delivered by either incubator management, an outside provider or some combination of the two. Incubator management most commonly offered assistance in the following areas:

- Business plans,
- Government grant and loan procedures, and
- Accessing tenant revolving loan funds.

Outside providers were most frequently available to provide assistance in more technical areas, such as legal services, accounting, equity and debt financing, and patent assistance. However, the data suggest that broad outside provider support networks are common at many incubators. Table II-1 presents the percentage of respondent incubators offering a given type of assistance and whether it was available through incubator management or an outside provider. Although incubator management offered a great deal of the assistance, outside providers were available to tenants in most areas.

Method of payment. Depending on the service, it was either included in tenant rents, donated by an outside provider, paid for by the tenant or some combination of the above. Not surprisingly, services offered by the incubator manager were more likely to be included in the tenant's rent and those provided by outside providers were more likely to be paid for by tenants, either at full or partial costs.

Table II-2 summarizes the method of reimbursement associated with the delivery of management and technical services to tenants. Since the methods of payment are not mutually exclusive, it was common for more than one to apply to a given service.

Services most commonly included in rent. Incubators typically included business plan assistance, government grant and loan assistance, marketing and government procurement assistance in their tenant rents. These types of assistance were usually provided by incubator management.

Newer incubators were more comprehensive in the array of services they offered. Specifically, incubators started in the last two years were more likely to offer patent assistance, accounting, computer services, legal assistance, and seed capital funds than their older counterparts.

TABLE II-1. AVAILABILITY OF MANAGEMENT OR TECHNICAL ASSISTANCE

Type of Assistance	Percent(1)	Service Delivery System(2)	
		Incubator Management	Outside Provider
Business Plans	98.3%	72.9%	51.7%
Marketing	89.2	60.7	70.1
Accounting	88.3	33.0	85.8
Gov't Grants & Loans	73.3	70.5	44.3
Legal Services	68.3	8.6	91.4
Patent Assistance	63.3	42.1	72.4
Computer Training	60.8	45.2	67.1
International Trade	60.6	48.6	68.1
Gov't Procurement	55.0	47.0	65.2
Equity and Debt Financing	55.0	43.3	80.6
Access to Sophisticated Computer Processing	51.7	40.3	66.1
Access to Other Resources Outside the Incubator	46.7	70.6	51.0
Research and Development	45.8	50.9	69.1
Business Taxes	43.3	30.2	79.2
Tenant Revolving Loan Fund	32.5	66.7	31.6
Tenant Seed Capital Fund	30.3	51.4	45.9

(1) Denotes percentage of all incubators offering a given type of assistance.
(2) Denotes who provides assistance among incubators offering that service. Percentages total more than 100 because both the incubator and an outside provider can offer assistance at the same incubator.

TABLE II-2. METHOD OF REIMBURSEMENT FOR MANAGEMENT OR TECHNICAL ASSISTANCE

Type of Assistance	Percentage of Incubators(1)		
	Included in Tenant Rent	Tenant Pays Provider	Donated by Provider
Business Plans	50.0%	26.3%	44.9%
Marketing	48.6	49.5	46.7
Accounting	27.4	67.9	45.3
Gov't Grants & Loans	46.6	37.5	30.7
Legal Services	12.3	74.1	45.7
Patent Assistance	22.4	61.8	34.2
Computer Training	37.0	61.6	26.0
International Trade	31.9	51.4	38.9
Gov't Procurement	37.9	37.9	45.5
Equity and Debt Financing	31.3	56.7	31.3
Access to Sophisticated Computer Processing	24.2	74.2	30.6
Access to Other Resources Outside the Incubator	49.0	43.1	25.5
Research and Development	34.5	63.6	36.4
Business Taxes	24.5	62.3	34.0

(1) Denotes alternative method of reimbursement among respondent incubators offering a given service. Rows may total more than 100 percent because incubators frequently have more than one form of cost recapture for a given service.

Tenant Use of Assistance

Data from the tenants responding to the survey was tabulated to provide a measure of how widely various incubator assistance programs were utilized. The reader should recognize that tenant responses do not represent a random sample of all incubator tenants; they only pertain to the 569 firms for which survey data were received.

Shared office services. Photocopying, conference rooms, incubator security and Fax machines were used by over half of the 569 tenants responding to the survey:

Shared Office Service	Percent Who Had Used Service
Photocopies	81.3%
Conference room	65.9
Receptionist/phone coverage	58.0
Incubator security	57.0
Fax machine	55.2
Office equipment/furniture	47.3
Word processing/typing	37.7
Business library	32.7
Computers	23.5
Extra storage	19.9
Audio/visual equipment	18.9
Incubator bookkeeping	16.8
Group medical insurance	2.6

Technical and marketing assistance. Data suggest that tenant use of technical and marketing assistance occurs in many areas. Business plan assistance, marketing and accounting were the most widely used:

Type of Assistance	Percent Who Had Received Assistance
Business plan	55.8%
Marketing	51.1
Accounting	49.9
Legal services	41.8
Research & development	30.8
Business taxes	29.6
Government procurement	25.3
Computer training	24.3
Access to computer processing	20.5
Patent assistance	14.6
International trade	13.6

Over 35 percent of respondent tenants indicated they had received direct financial assistance, in one form or another, through the incubator. The most

common included revolving loan funds (10.5 percent), government grants (6.5 percent), venture funding (4.1 percent) and government loans (4.1 percent).

Summary

Survey data reflect the wide variety of office services and management and technical assistance available at business incubators. Certain services including business plan assistance, accounting and marketing assistance were available at almost all incubators. Others, such as seed capital funds, tenant revolving loan funds and access to sophisticated computer processing equipment were offered less frequently.

Incubator management often provided assistance with business plans and government funding, while technical services such as legal and accounting skills were more likely to be provided by outside providers. The prevalence of assistance from outside providers suggests that incubators frequently have extensive support networks for their tenants.

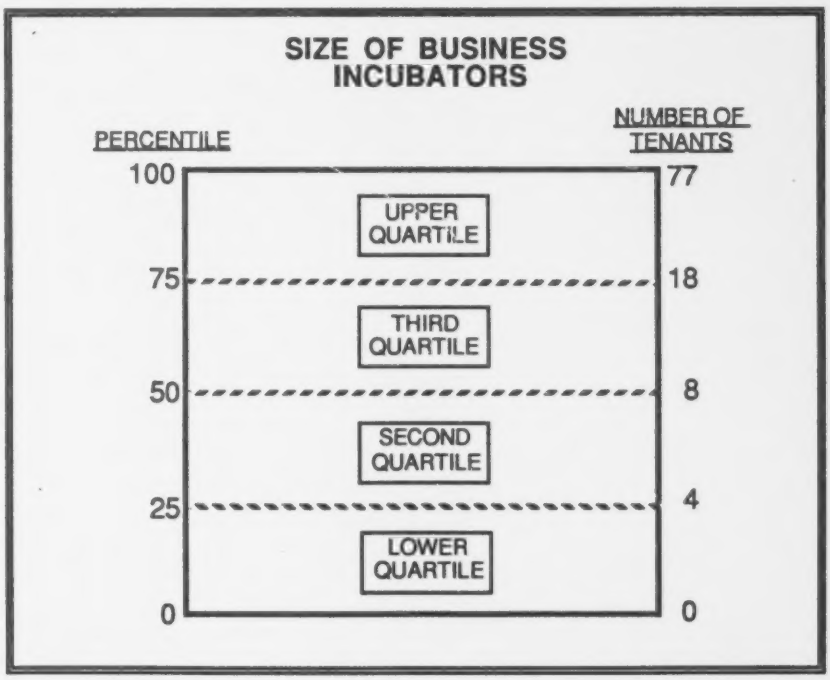
Assistance provided by incubator managers was the most likely to be included in tenant rent. Tenant use of services and assistance extended into all areas offered and most tenants received more than one type of assistance.

SECTION III. INCUBATOR TENANT CHARACTERISTICS

This section discusses incubator tenants, entry criteria, tenant recruitment and tenant graduations and failures.

Incubator Information

Number of tenants. Incubators were ranked by size based on number of tenants. The median number of tenants was eight. Incubators in the top quartile had 18 or more tenants. The distribution of incubators by number of tenants is presented below:



The number of tenants at respondent incubators ranged from zero (in four cases) to a high of 77 tenants. On average, incubators had 11.5 tenants.

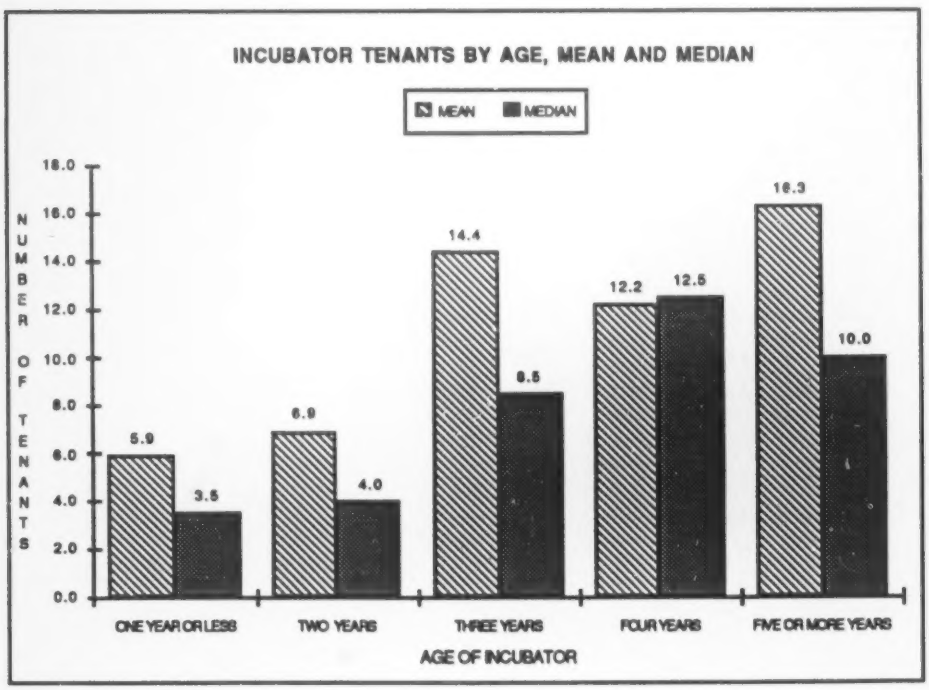
Anchor tenants, defined as mature businesses with larger space requirements or longer leases were not included in these analyses, although they were present at over 40 percent of the incubators surveyed. Over three-quarters of anchor tenants were for-profit businesses.

Although only 12 respondent incubators were for-profit, five of these (or about 40 percent) had 20 or more tenants, compared with just 14 percent of the non-profit incubators.

Not surprisingly, larger incubators had more tenants:

	Number of Tenants	
Size of Incubator	Mean	Median
<20,000	6.3	4.0
20,000-39,999	11.4	10.0
40,000-59,999	13.3	14.5
60,000+	20.5	16.0
All Incubators	11.5	8.0

Older incubators also had more tenants:



Rural incubators tended to have fewer tenants. Over two-thirds had four or less tenants. Urban incubators, which represented 53.5 percent of all incubators, accounted for 75 percent of the incubators with twenty or more tenants.

Incubators surveyed were typically not operating at their maximum number of tenants. On average, the number of current tenants represented about 62 percent of the stated capacity of respondent incubators.

Newer incubators had lower occupancy to capacity ratios:

Year Opened	Number of Tenants as a Percent of Capacity	
	Mean	Median
1989	41.8%	38.5%
1988	53.0	50.2
1987	70.1	73.6
1986	67.7	75.5
1985 or before	67.9	71.7

Entrance criteria. Only two incubators reported no tenant entrance criteria. The most commonly cited entrance criterion was compatibility with overall business incubator objectives:

Entrance Criteria	Percent Utilizing Entrance Criteria
Compatibility with incubator business objectives	85.8%
Ability to pay rents	80.0
Projected growth potential	74.2
Completion of application package	69.2
Completion of business plan	68.3
Approval of screening committee	67.5
Demonstrated business capabilities of principals	64.2
For-profit business	59.2
Must comply with incubator reporting requirements	50.8
Equity/royalty required	12.5

Entry restrictions by type of firm. All incubators surveyed had some restrictions on the types of businesses they would accept. The most commonly restricted types of firms included retailers, followed by heavy manufacturing and non-profit firms. The percentage of incubators restricting entry for selected types of businesses is presented below:

Business Type	Percent of Incubators Restricting Entry
Retailers	97.5%
Heavy manufacturing	82.4
Non-profit	80.7
Commercial/fine arts	69.7
Construction	66.4
Mail Order	56.3
Wholesale/distribution	54.6
Sales/marketing	42.9
Services (professional and other)	37.0
High tech	19.3
Research and development	16.8
Light manufacturing	12.6

As indicated, most incubators accept light manufacturing, research and development and high technology firms.

Tenant recruitment. Tenant recruitment takes a variety of forms ranging from newspaper classified advertising to referrals from other tenants. Incubator managers rely on many sources; multiple responses were common:

Recruitment Method	Percent of Respondents
Informal external network	90.8%
Public speaking	87.5
Brochures/pamphlets	82.5
Tenants referral	80.0
Affiliated agency's referral	79.2
Mass media exposure	66.7
Building signage	38.3
Newspaper classifieds	32.5
Public service advertising	19.2
Promotional videotape	15.8
Commercial leasing agents	14.2
TV/radio advertising	6.7

As one indicator of the effectiveness of alternative recruitment strategies, tenants were asked how they had first heard about their incubator. The most common response was through an informal external network.

How tenants heard about incubator	Tenants (n=569)	
	Number	Percent
Informal external network	208	42.0%
Publicity in mass media	80	16.2
Affiliated agency referral	58	11.7
Tenant referral	55	11.1
Newspaper classified	23	4.6
Public speaking	11	2.2
Brochures/pamphlets	9	1.8
Other	51	10.4

Results clearly suggest that a strong informal external network helped incubators recruit tenants. Mass media exposure was also significant. Public speaking led to the direct recruitment of relatively few tenants, however it undoubtedly contributed to tenant recruitment indirectly through referrals and media exposure.

Business plans. About 55 percent of the incubators surveyed reported having a written, strategic plan. About 70 percent of incubator tenants responding indicated they had current written business plans.

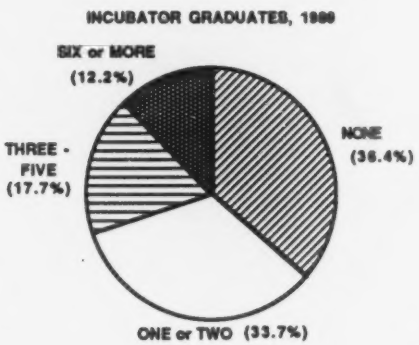
Incubator Graduates and Failures

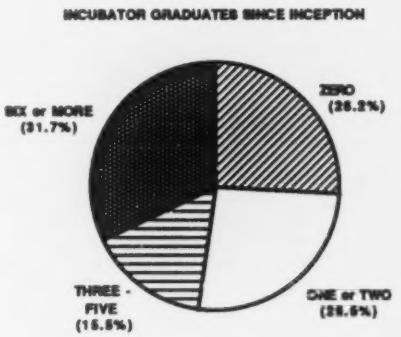
Incubator graduates were defined for purposes of the survey to include businesses that grew while in the incubator and that moved out more viable than when they went in. Anchor tenants were not included in the analysis.

Incubator tenant graduates. Incubators are producing graduates. Over 63 percent of the respondent incubators had graduates in 1989. The 107 incubators responding to this question produced 267 graduates in 1989, an average of two and a half graduates each.

Based on the average incubator size of 11.5 tenants, this translated to a 22 percent average annual graduation rate among incubator tenants. Data from a special subsample of 134 selected incubator graduates reveal that median or typical length of stay for graduates fell between two and three years.

Since their inception, the incubators surveyed had produced about 635 graduates. About 75 percent of respondents had at least one graduate. Over 31 percent had had six or more graduates. The distribution of incubators by their number of graduates in 1989 and since inception are presented below:





Older incubators produced more graduates, but the differences were minimal after the third year of operation:

	Number of Graduates,1989	
Year Incubator Opened	Mean	Median
1989	0.0	0.0
1988	1.6	1.0
1987	3.1	1.0
1986	3.5	2.0
1985 or earlier	3.0	2.0

Employment. These graduates represented a substantial number of full time jobs. Since inception, the total employment produced by graduates of respondent incubators was over 6,300. About 1,850 of these were created in 1989.

Among the incubators with graduates in 1989, total average employment of graduates was 28. Since their inception, incubators with graduates reported producing an average 88 jobs each. The median number of jobs associated with these incubator graduates was just over 20 in 1989 and 32.5 since inception:

	Graduate Firms		Full Time Employees	
Time Period	Mean	Median	Mean	Median
1989	2.5	1.0	28.1	20.5
Since inception	6.2	2.0	87.9	32.5

Incubator tenant failures. Incubator tenant closings were also common. Half of the 104 incubators responding to this question had tenants close in 1989. Over two thirds reported at least one failure since the incubator's inception.

Number of	1989		Since Inception	
Tenant Failures	Number	Percent	Number	Percent
None	52	50.0%	34	33.0%
One	28	26.9	15	14.6
Two	13	12.5	22	21.4
Three to five	10	9.6	16	15.5
Six or more	1	1.0	16	15.5
Total	104	100.0%	103	100.0%

On average, just over one tenant per incubator failed in 1989. This translates to an average annual tenant failure rate of about nine percent.

Older incubators had moderately more tenant failures:

	Number of Tenant Failures, 1989	
Year Incubator Opened	Mean	Median
1989	0.1	0.0
1988	0.6	0.0
1987	1.4	1.0
1986	1.1	1.0
1985 or earlier	1.4	1.0

Failure rates did not vary appreciably by location (i.e. rural, urban, suburban).

Reasons cited for tenant failure were diverse. From data on 123 failed incubator tenants, six broad categories of responses were identified. Financing

problems were the most common, typically relating to lack of working capital. Market or product related problems and management related problems were also prevalent. The importance of a single key individual in tenant companies was evidenced by the number of times personal reasons and health related problems were identified as key reasons for business failure. These data, along with the most common response within each category are summarized:

Reason for Closing (Most Common Responses (n))	Responses (N=123) Number	Percent
Financial problems (lack of working capital (21))	29	23.6%
Market/product related problems (poor market conditions (11))	23	18.7
Management problem (poor management (14))	23	18.7
Personnel reasons (owners took other employment (6))	17	13.8
Health of key individual (owner illness (8))	14	11.4
Other (general business failure (7))	17	13.8
Total	123	100.0%

Current Tenant Information

Selected information from the 569 tenants responding to the tenant survey is presented below. The reader should recognize that tenant responses do not represent a random sample of all incubator tenants; they only pertain to the 569 firms for which survey data were received. All data are presented with the number of respondents (n) to each question.

Industry type. Light manufacturing and service businesses are the most common incubator tenants, each accounting for over 25 percent of incubator businesses. High technology firms represented just over 15 percent of the total:

Incubator Tenants by Industry	Tenants (n=569) Number	Percent
Light manufacturing	150	26.5%
Service businesses	145	25.7
High technology products	87	15.4
Research and development	48	8.5
Sales/marketing firms	42	7.4
Wholesale/distribution	31	5.5
Construction related	17	3.0
Other	45	8.0
Total	569	100.0%

These data are based on tenant responses; categories may not be mutually exclusive, but respondents were asked to pick only one category.

Minority/women owned businesses. Just over 13 percent of the tenants responding were minority owned businesses and 21 percent were women owned:

Type of Ownership	Percentage of Respondents Yes	No	(n)
Minority	13.5%	86.5%	542
Women	20.7	79.3	545

Patent information. Just under 18 percent of tenant respondents, or 75 tenants, reported applying for a total of 185 patents:

Patent Information Item	Number	(n)
Tenants applying for patents	75	421
Patents applied for	184	421
Average number of patent applications per tenant applying	2.5	75
Percent of respondents applying for patents	17.8%	421
Average number of patents per respondent	.44	421

Tenant revenue and employment. Median annual sales were $120,000 for the most recently completed fiscal year and tenants had median annual sales increases of $75,000 since entering the incubator. The median number of employees at incubator tenants was three. The median number of new employees added since entering the incubator was one. Average employment and sales figures were higher reflecting the presence of relatively few large tenants:

Item	Mean	Median	(n)
Employment:			
Current employment	5.9	3.0	517
Change since entering incubator	3.9	1.0	496
Revenue:			
Annual sales	$496,696	$120,000	247
Change since entering incubator	$393,440	$75,000	239

Analyses of employees added or lost in 1989 by the length of time a tenant had been in an incubator were not entirely conclusive. Data suggest that, on average, tenants may add more employees during their first two years than in subsequent years. Although the number of tenants remaining in incubators more than three

years was relatively low, several long term tenants (five or more years) had substantial employment gains in 1989:

Year of Tenancy	Number of Employees Added in 1989		
	Mean	Median	(n)
First Year	2.1	0	164
Second Year	2.7	1	118
Third Year	2.0	1	73
Fourth Year	1.7	1	27
Fifth Year	0.1	0	17
Sixth Year or more	4.1	2	23

Generally, revenues increased with the length of time a tenant spent in an incubator. Median revenues increased each year, however, average revenues declined from year one to year two. Although longitudinal data on the same firms for several years is necessary to support a conclusion about tenant success, it appears possible that the second year may represent a critical period for tenants. Incubator managers may want to pay special attention to tenants during this period:

Year of Tenancy	1989 Sales		
	Mean	Median	(n)
First Year	$256,247.55	$70,000.00	78
Second Year	207,101.74	98,000.00	73
Third Year	311,625.00	162,500.00	48
Fourth Year	541,923.22	275,000.00	23
Fifth Year or more	2,406,240.00	550,000.00	25

Tenant to tenant sales. Of interest, 61 percent of tenant companies reported they had bought goods and services from, or sold them to, other incubator tenants.

Summary

The median number of tenants at respondent incubators was eight. The average (11.5 tenants) was higher reflecting the presence of several large incubators. For-profit incubators tended to have more tenants and rural incubators less than average.

Retail firms, heavy manufacturing and non-profit firms were not permitted in over 80 percent of incubators surveyed. The most effective form of tenant recruitment was through referrals from a strong informal external network, although incubator managers commonly used many different recruitment mechanisms.

Over 60 percent of survey respondents had graduates in 1989. This represented an estimated 267 businesses and 1,850 jobs, or 28 new jobs for each

incubator with graduates. The average annual graduation rate for incubator tenants was 22 percent in 1989. The average annual tenant failure rate approximated nine percent. Incubator graduates and failures both increased during the first three years of operation, then leveled out. On average, incubators three years or older produced about three graduates per year and had 1.3 failures.

Incubator tenants were most commonly in the light manufacturing and service industries. Minority ownership was present 13.5 percent and women-owned businesses 21 percent of the time. On average, tenants had just under six employees. Median total tenant employment was three. Since their entrance to the incubator, tenants had increased median employment by one and annual sales of $75,000.

Longitudinal data on tenant firms over several years were not collected, but analysis of employment growth by length of time in an incubator suggest that after year two the number of employees added by tenants *still remaining* in incubators decreased. Over 60 percent of incubator tenant respondents reported buying and selling goods and services to other incubator tenants.

SECTION IV. COMMON INCUBATOR PROBLEMS

This section presents a qualitative assessment of the types of operating problems and potential solutions most commonly reported by incubator managers.

Most Common Problems

Tenant and facility problems dominated the list of problems reported by incubator managers. The problem of tenant finance was mentioned most frequently, just under 30 percent of the time. Attracting qualified, reliable tenants was a problem for some. Key problems are summarized:

Incubator Manager's
Most Commonly Reported Problems

Problem	Number of Mentions
1. Tenant finance	35
2. Tenant characteristics	32
3. Facility conditions and financing	23
4. Incubator/tenant relations	17
5. Community relations	12

Problem Definition and Potential Solutions

Although the problems were typically not serious, the collective insights of incubator managers into problem resolution should be valuable to others. Survey responses, by problem, and suggested steps towards mitigation are discussed below.

Problem #1. Tenant finance. Problems in tenant finance related to lack of capital and limited access to capital. This included debt and equity capital, as well as short and long term funding.

Potential Solutions

- Incubator managers set up meetings with potential investors, including venture capitalists to meet with tenants to address their equity needs. Several developed seed capital funds.
- Loan pools and revolving loan funds were established to provide short term working capital for tenants.
- Small Business Investment Corporations (SBIC's) were developed on site and Small Business Innovation and Research Grants (SBIR's) were sought to provide tenant funding.

- Several worked closely with state and local entities to create opportunities to make these types of funds available.

- Networking was commonly used to link tenants to venture capital firms, university alumni, bankers and others with access to funds.

- An important, yet often overlooked, solution was to insure tenants take all the steps necessary to control their own costs. Tenants frequently staffed too heavily or ineffectively thus contributing to their own financial problems.

Problem #2. Tenant characteristics. Tenant problems related to timely graduation, tenant payment of bills, and recruitment of qualified tenants.

Potential Solutions - Tenant Graduation

- Graduated rent structures that increase over time are utilized to encourage tenants to graduate.

- To help tenants recognize the need to leave the incubator, the impacts of the incubator's programs and services are defined, measured and related to the progress of the business enterprise.

Potential Solutions - Tenant Payment of Rents and Bills

- Incubator managers often resorted to strict measures such as cutting off services, collections letters, personal visits, early reinforcement of exit policies and even eviction to insure timely payment of rent and bills.

- Other incubators threatened to withhold grant money as a means of increasing leverage over tenants.

Potential Solutions - Tenant Recruitment

- As noted in survey data, tenant recruitment was most effective when an active external referral network was present. Cultivating these networks was recommended as was marketing the incubator to banks, civic groups and others.

- Small Business Development Centers (SBDC's) were utilized as a source of leads.

- Students and university research staff were tapped for new business ideas.

- Managers utilized "free" media exposure in the form of news reports on television, radio and in the newspaper.

Problem #3. Facility conditions and financing. Limited facility cash flows created problems for incubator managers in paying for necessary building maintenance, office renovations, utilities, and capital improvements. Continuity of funding over time was important.

Potential Solutions

- Managers assembled coalitions of business, university, and government leaders to raise capital for the development of office space.

- They "covered the waterfront" in their search for alternative sources of funding. Recommendations included churches, foundations, local business organizations, private individuals and all levels of government.

- Managers approached local contractors to donate time and materials for both development and routine maintenance of office space.

- They recruited expanding local companies, building maintenance companies and others to relocate into the incubator at reduced rents in exchange for renovation and/or facility management assistance.

- Others developed an annual capital improvements schedule and budget. By keeping to the schedule they avoided more costly repairs later.

Problem #4. Incubator/tenant relations. Inadequate communication between tenants and incubator managers was the most common cause of problems with incubator/tenant relations.

Potential Solutions

- Managers established more formalized channels of communication, including ongoing, regularly scheduled, group and individual meetings with tenants. Interestingly, some managers also recognized the need for more informal communications, perhaps in non-business environments. The presence of this dichotomy underscored the need for solutions tailored to specific situations.

- The need for continued efforts to develop, expand and evaluate counseling services offered to tenants was recognized, as well as continued management responsiveness to tenants.

- Managers recognized the need to offer business development assistance in an orderly and logical progression, such as begin-

ning with business plan development, then marketing assistance, logo, patent criteria, tax requirements, etc. If needed, arrangements were made for specialized training for tenants in critical areas such as record keeping.

Problem #5. Community relations. Several incubators were faced with limited public awareness or poor perception problems.

Potential Solutions

- Managers used newspapers, speaking engagements, and community events to communicate the purposes and track record of the incubator program.
- Specific programs were designed to relate actual tenant experiences to the needs and the concerns of the local community. Incubator success stories were highlighted.
- Community mixers and fairs were conducted and promotional materials developed to educate and generate community involvement.

Summary and Implications

Incubators face common problems. This section has briefly summarized those problems and potential solutions identified by survey respondents.

One recurring theme was the need for adequate funding. Tenant financial needs ranged from equity capital to short and long term debt financing. Adequate access to capital is an essential component of tenant success and therefore should be a high priority for those organizing and managing incubators.

Similarly, inadequate incubator funding created problems for the incubator manager. Incubator needs included both operating funding and money for facility improvements and maintenance. Continuity of funding was identified as a problem as well. Funding disruptions and underfunding both force the incubator manager to devote more time to raising capital and consequently less time to tenants.

Incubator managers were concerned with the recruitment of good quality tenants. Informal external networks were the most commonly suggested solution. Other survey data support the usefulness of these networks as well. Not only did they provide a source of quality referrals, they were useful in providing access to financial, technical and managerial resources.

APPENDIX A. INCUBATOR FINANCE

Respondents were asked to provide information on incubator financial performance for their most recently completed fiscal year. Because incubator operations were so varied, capturing financial data in a standard format applicable to all incubators was extremely difficult. This Appendix attempts to summarize some of the key financial data and present two financial case studies utilizing a subset of the data. The reader is cautioned that these data are unaudited.

Methodology

Financial data were received from 80 incubators. Of these, 64 were complete enough to be useful and provided at least some financial data.

Many surveys contained incomplete or partial financial responses. Because the incubator industry has no standard accounting or financial reporting procedures and incubator funding comes from a variety of sources, comparability of the data was difficult to achieve. The financial information reported in this section is presented in a manner designed to maximize comparability and the usefulness of the data. Certain key terms and reporting conventions have been utilized which need explanation. These include:

- **(n).** The (n) is the number of responses to a given question. This will vary from question to question as not all respondents completed all portions of the survey or had all revenue or expense items.

- **Mean.** The mean is the average of all responses for a given revenue or expense item.

- **Median.** The median is the response which represents the middle point in all responses. Half the responses will be higher and half will be lower. The median will not be impacted by one or two outlying responses, that might impact the mean.

One significant reporting convention was adopted for presentation of the financial data. Data for each line item represent *independently calculated variables*. Because no respondent received funding from all potential revenue sources, nor had expenses in all potential expense categories, the means and medians presented were calculated *only* from the subset of the sample that provided data for an individual line item. This approach was utilized to maximize the number of useable responses to each financial item and to allow the incubator manager to compare their own performance with others on a *given variable*.

For instance, a manager of an incubator receiving local funding may be interested in typical local funding levels at other incubators reporting this type of revenue. Had the responses been weighted to reflect all incubators in the survey,

the mean and median would be lowered by the zero responses from incubators not receiving local funding sources.

The reader should recognize that by calculating each line item as an *independently calculated variable* the subtotals and totals presented will not represent the sum of the individual line items because not all incubators reported information for each line item. For items where less than three incubators reported data, certain responses were suppressed to protect confidentiality.

Limitations

The data presented in this section are drawn from a limited sample of incubators and are unaudited. Several respondents with outlying data were eliminated. Response was voluntary and much information was missing or partially reported. With the exception of obvious mathematical errors, all data are reported as received. Net income figures were deemed unreliable and as such were not reported.

Furthermore, wide differences between the mean and median of some items suggest financial data may not have a normal distribution. As such, these data should be viewed as informative, but results should not be construed as necessarily representative of the incubator industry as a whole.

Revenues

Total average 1989 revenues at incubators surveyed were $200,560. Incubator funding was relatively evenly split between operating and non-operating sources. On a median basis funding levels were substantially lower, reflecting the presence of a relatively few incubators with significantly higher revenues. The median revenue level for incubators surveyed was $122,000.

Operating revenues. Tenant rental fees represented the largest single operating revenue item for most incubators, on average accounting for almost 85 percent of the total. On a median basis, tenant revenues were by far the largest revenue item. Other common sources of incubator operating revenue included tenant service fees and interest income. Mean total operating revenues were about $124,500:

		Response	
Operating Revenues	(n)	Mean	Median
Tenant rental fees	54	$105,627	$71,978
Tenant service fees	37	19,020	9,234
Equity from tenants	4	3,734	2,442
Interest income	32	6,656	1,675
Other income	26	22,128	1,675
Subtotal	59	$124,514	$78,104

Non-operating revenues. Over two-thirds of the incubators surveyed received some revenue from non-operating sources in 1989. Local government agencies were the most common source of these revenues for incubators; 22 of 64 incubators reported an average of $59,300 in revenues from these sources. On average, state agencies provided the largest amount of non-operating revenue. Several large, well funded, state-sponsored incubators were included in the sample driving up mean state funding levels. Contributions from corporations, universities and individuals, when present, averaged about $25,000:

		Response	
Non-operating Revenues	(n)	Mean	Median
Federal agencies	3	*	*
State agencies	10	$185,667	$50,000
Local agencies	22	59,300	47,000
Corporate contributions	12	26,365	29,568
University contributions	9	24,906	20,000
Individual contributions	8	24,515	11,039
Subtotal	40	$114,669	$62,254

*Too few responses to be reported.

Expenses

Total operating expenses averaged $191,000 in 1989. The median was about $104,000:

		Response	
Operating Expenses	(n)	Mean	Median
Labor costs	53	$79,462	$50,230
Plant & equipment	45	53,714	30,774
Marketing and promotion	37	4,969	2,000
Other	60	76,238	50,022
Total	60	$190,782	$104,128

- **Labor.** Total labor costs averaged about $80,000. For those reporting it, fringe benefits averaged 13.3 percent of total labor costs. On average, labor costs represented about 40 percent of operating costs.
- **Plant and equipment costs.** Plant and equipment costs averaged $54,000 or about 28 percent of total operating costs.
- **Marketing/promotion costs.** Marketing and promotion costs averaged just under $5,000 at the 37 incubators reporting these costs.
- **Other operating expenses.** Other operating expenses averaged about 40 percent of mean operating costs, averaging $76,000 in 1989. Maintenance and utilities represented about half of this total.

Incubator Start-up Costs

Incubators opened in the last two years were asked to report start-up cost information. Data from 29 incubators were received.

Average start-up costs were about $544,000, but the median cost of $182,000 was much lower. Incubator start-up costs by source are summarized below:

		Response	
Item	(n)	Mean	Median
Site acquisition	10	$227,620	$134,000
Architectural fees	9	42,339	35,000
Construction	8	557,023	597,500
Equipment/furnishings	16	31,511	31,397
Improvements/renovations	16	224,724	10,500
Legal/professional services	9	6,151	1,500
Promotion	13	11,269	5,000
Salaries and benefits	12	39,303	41,000
Total	29	$543,881	$182,000

Selected Case Studies

To explore the depth of the financial database and identify possible opportunities for further research, two subsamples of 10 incubators each were drawn from the financial database for comparative analysis. Incubators selected held relatively complete financial data. They were divided into the following groups:

(1) Self Funded -- These incubators received all of their revenue from operations (i.e., they received no non-operating funding such as grants or contributions to sustain operations).

(2) Substantially Subsidized -- These incubators received at least half of their revenues from non-operating sources in their most recently completed fiscal year.

On a gross square footage basis, the incubators in both groups were similar. The Self Funded group had somewhat higher average revenue per gross square foot, but median levels were similar. Total operating revenues and expenses were lower in the Self Funded group. Key characteristics of each group are summarized below:

Characteristic	Self Funded Incubators Mean	Self Funded Incubators Median	Substantially Subsidized Incubators Mean	Substantially Subsidized Incubators Median
Percent of revenue from non-operating sources	0.0%	0.0%	70.3%	69.6%
Gross square feet	44,445	30,123	38,700	31,500
Rental fee revenue per gross square foot	$3.25	$2.47	$2.23	$2.52
Year started	1981	1983	1984	1985
Total revenues	$119,493	$86,874	$351,678	$207,225
Total expenses	$113,182	84,775	342,680	198,788
Net operating income (before depreciation)	$6,301	$7,411	$8,998	$8,437

Operating revenues. The Self Funded group received 100 percent of its revenues from operations. The Substantially Subsidized group received about 30 percent of its funding from these sources. The Self Funded group, on average, relied on tenant rental fees for over 90 percent of their funding. The median level was 97.6 percent. On average, the Substantially Subsidized incubators received about 78 percent of their operating revenues from these sources and another 13.4 percent from tenant service fees:

Operating Revenue Item	Self Funded Incubators Mean	Self Funded Incubators Median	Substantially Subsidized Incubators Mean	Substantially Subsidized Incubators Median
Tenant rental fees	90.7%	97.6%	77.9%	86.6%
Tenant service charges	5.2	0.0	13.4	6.0
Equity income	0.0	0.0	2.7	0.0
Other operating income	4.1	1.5	5.9	3.4
Total operating revenue	100.0%	N/A	99.9%*	N/A

*Does not add to 100 percent becomes of rounding.

Non-operating revenues. The Self Funded group received no non-operating revenues. The Substantially Subsidized group, on average, received over half of its non-operating revenue from local agency grants. State agencies provided another 22.9 percent of this revenue:

Non-Operating Revenue Item	Self Funded Incubators Mean	Self Funded Incubators Median	Substantially Subsidized Incubators Mean	Substantially Subsidized Incubators Median
Federal agencies	N/A	N/A	9.5%	0.0%
State agencies	N/A	N/A	22.9	9.4
Local agencies	N/A	N/A	53.7	70.4
Corporate contributions	N/A	N/A	6.3	0.0
University contributions	N/A	N/A	5.3	0.0
Individual contributions	N/A	N/A	2.2	0.0
Total non-operating revenue	N/A	N/A	99.9%*	N/A

*Does not add to 100 percent becomes of rounding.

Operating expenses. The Self Funded incubators spent less on salaries and wages and more on other operating expenses. The Substantially Subsidized incubators, on average, had more extensive marketing expenditures:

	Self Funded Incubators		Substantially Subsidized Incubators	
Expense Categories	Mean	Median	Mean	Median
Salaries/wages/benefits	28.2%	24.2%	49.8%	53.5%
Building costs	18.4	4.3	15.9	14.4
Marketing costs	0.5	0.0	5.6	1.5
Other operating expenses	52.9	53.4	28.7	27.1
Total	100.0%	N/A	100.0%	N/A

Fringe benefits were similar in both groups - 13.1 percent of salaries in the Substantially Subsidized Group and 15.5 percent in the Self Funded Group.

The distribution of other operating expenses is presented below:

	Self Funded Incubators		Substantially Subsidized Incubators	
Expense Categories	Mean	Median	Mean	Median
Professional services	1.9%	0.5%	2.7%	0.8%
Tenant services	0.3	0.0	5.1	0.2
Insurance	10.3	7.8	2.9	1.2
Maintenance/janitorial	19.3	16.3	14.2	12.8
Staff development	0.0	0.0	2.7	0.6
Utilities	36.5	30.8	22.4	24.7
Property taxes	13.0	5.6	4.6	0.0
Office expenses	5.1	1.1	20.8	21.3
Equipment rental	1.9	0.0	10.2	0.4
Other	11.7	1.6	14.6	2.8
Total	100.0%	N/A	100.0%*	N/A

*Does not add to 100 percent because of rounding.

Medians are substantially lower than means because many incubators did not report all expense items. Therefore, only limited conclusions can be drawn from these data. Self Funded incubators spent more on utilities and property taxes. Substantially Subsidized incubators, on average, had higher tenant services expenses (presumably commensurate with their higher tenant service fee income) and higher staff development and office expense costs.

Net income. Net income was measured as a percent of revenue and assets. Although data are limited, substantial differences in net income ratios were not apparent between the two groups:

	Self Funded Incubators		Substantially Subsidized Incubators	
Item	Mean	Median	Mean	Median
Net income as a percent of revenue	(1.8)%	6.5%	(1.0)%	2.2%
Net income as a percent of total assets*	2.9	0.7	2.4	0.6

*Only eight of ten Self Funded and three of ten Substantially Subsidized incubators reported capital assets.

Selected performance measures. Several key performance items of the incubators in both groups were compared. Although the Self Funded group had more tenants in 1989, the two groups on average had produced roughly the same number of graduate businesses since their inception. The Substantially Subsidized group had noticeably lower 1989 failure rates than their Self Funded counterparts:

	Self Funded Incubators		Substantially Subsidized Incubators	
Item	Mean	Median	Mean	Median
Number of tenants (YE 1989)	16.2	17.0	11.7	10.0
Graduates since inception	8.7	3.0	8.4	7.0
1989 Graduation rate	18.2%	15.0%	16.3%	17.0%
1989 Failure rate	13.6%	14.0%	2.8%	0.0%

Summary

Financial data were reported despite their limitations to provide at least some insight into incubator financial performance. Several limited conclusions can be drawn:

(1) Tenant rental fees were the primary source of operating funds among incubators surveyed.

(2) Many incubators relied heavily on non-operating funding sources to make up what would undoubtedly by sizeable operating losses. In doing so they are utilizing a variety of funding sources.

(3) Labor, maintenance and utilities represented the largest expense items for most incubators.

(4) Major start-up cost items for incubators included construction and site acquisition. Mean start-up costs were much higher than

median costs emphasizing the dramatic differences between incubators.

(5) Analysis of two special subsamples of the financial database suggest some differences between Self Funded incubators and those receiving substantial financial assistance. Self Funded incubators had lower total revenues, spent less on wages and salaries, and had higher tenant failure rates. Substantially Subsidized incubators received over half their revenue from non-operating sources, were more likely to receive revenue from tenant services and had fewer total tenants than the Self Funded group.

APPENDIX B. LIST OF RESPONDENT INCUBATORS*

Atmore Small Business Incubator
Atmore, AL

Auburn Center for Developing Industries
Auburn, AL

Birmingham Business Assistance Network
Birmingham, AL

Center for the Advancement of Developing Industries
Birmingham, AL

East Arkansas Business Incubator System
Jonesboro, AR

North Arkansas Business Incubator System
Salem, AR

H.J. Heinz Rural Incubator
Chico, CA

Business Incubator, Inc..
Redding, CA

San Diego Business Innovation Center
San Diego, CA

Santa Ana Business Enterprise Center
Santa Ana, CA

Fremont County Business Development Center
Canon City, CO

Denver Growth Center, Inc.
Denver, CO

Western Colorado Business Development Corporation
Grand Junction, CO

Pueblo Business and Technology Center
Pueblo, CO

Bridgeport Innovation Center
Bridgeport, CT

Southeastern Innovation Centers
Orlando, FL

Entrepreneur & Technology Development Center
Orlando, FL

Advanced Technology Development Center
Atlanta, GA

Allied Enterprise Center
Macon, GA

Advanced Technology Development Center - Warner Robins Branch
Warner Robins, GA

Kaimuki Technology Enterprise Center
Honolulu, HI

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* Responses from several incubators on this list were received too late to be included in the report.

Southern Illinois Small Business Incubator
Carbondale, IL

Control Data Business and Technology Center
Champaign, IL

Fulton-Carroll Center for Industry
Chicago, IL

Des Plaines River Valley Enterprise Zone Incubator
Joliet, IL

Bradley University Business Technology Incubator
Peoria, IL

Columbus Enterprise Development Center
Columbus, IN

Fort Wayne Enterprise Center
Ft. Wayne, IN

Iowa State Innovation System
Ames, IA

Golden Circle Business Center
Ankeny, IA

Circle West Incubator
Audubon, IA

Charles City Business Opportunity Center
Charles City, IA

University of Iowa Technology Innovation Center
Iowa City, IA

Kirkwood Community College New Business Center
Marion, IA

Kansas Entrepreneurial Center
Manhattan, KS

Enterprise Place
Wichita, KS

Ashland Business Center
Ashland, KY

Northeast Louisiana Business Incubation Center
Monroe, LA

Bangor International Enterprise Development Center
Bangor, ME

University of Maryland-Baltimore County Technology Enterprise Center
Baltimore, MD

Technology Advancement Program
College Park, MD

Crossroads Venture Center
Cumberland, MD

Wadsworth Village
Danvers, MA

J.B. Blood Building
Lynn, MA

Albion Business Service Center
Albion, MI

Diamond Venture Management, Inc.
Ann Arbor, MI

Ferris State University Manufacturing Resource and Productivity Center
Big Rapids, MI

Jackson Business Development Center
Jackson, MI

Enterprise Center of Lapeer
Lapeer, MI

Center for Business Development
Niles, MI

North Oakland Business Centers
Pontiac, MI

Business and Technology Center
Saginaw, MI

Sault Ste. Marie Industrial Incubator
Sault Ste. Marie, MI

Southfield Incubator Center, Inc.
Southfield, MI

The Franklin Business Center
Minneapolis, MN

St. Paul Small Business Incubator
St. Paul, MN

Missouri Ingenuity
Columbia, MO

Center for Business Innovation
Kansas City, MO

St. Louis Enterprise Center
St. Louis, MO

Butte-Silver Bow Business Development Center
Butte, MT

Omaha Business and Technology Center
Omaha, NE

Nanho Office Center
Las Vegas, NV

Thayer Innovation Incubator
Hanover, NH

Professional Resources Center
East Brunswick, NJ

Stevens Technology Ventures Incubator
Hoboken, NJ

CARR Business Innovation Center
New Brunswick, NJ

New Mexico Business Innovation Center
Albuquerque, NM

University at Buffalo Foundation Incubator, Inc.
Amherst, NY

Western New York Technology Development Center
Buffalo, NY

Cornell University Langmuir Lab
Ithaca, NY

Research Start Facility
Ithaca, NY

Broome County Industrial Incubator
Johnson City, NY

Expanding Business Services, Inc. (EBS)
New York, NY

Keuka Enterprise Incubator
Penn Yan, NY

Greater Syracuse Business Center
Syracuse, NY

Rensselaer Polytechnic Institute Incubator Center
Troy, NY

Regional Small Business Incubator
Ahoskie, NC

The Ben Craig Center
Charlotte, NC

Triangle South Small Business Incubator
Dunn, NC

McDowell Small Business & Incubator Development Center
Marion, NC

Smokey Mountain Development Corp.
Waynesville, NC

Ohio University Innovation Center
Athens, OH

Hamilton County Business Center
Cincinnati, OH

Enterprise Development, Inc.
Edison Technology Incubator
Cleveland, OH

Business Technology Center
Columbus, OH

Springfield Technology Center
Springfield, OH

Atoka Kiamichi Vo-Tech. Incubator
Atoka, OK

Tri-County Business Assistance Center
Bartlesville, OK

Central Oklahoma Business and Job Development Corporation
Drumright, OK

Rural Enterprises Industrial Incubator
Durant, OK

Canadian County Commercial Incubator
El Reno, OK

MEDS Business Incubator
McAlester, OK

OKC Innovation Center, Ltd.
Oklahoma City, OK

Business Enterprise Center
Corvallis, OR

Cascade Business Center Corporation
Portland, OR

Bridgeworks Enterprise Center
Allentown, PA

Altoona Area Incubator
Altoona, PA

NET Ben Franklin Technology Center
Bethlehem, PA

Opportunities Without Limits, Inc. (O.W.L. Inc.)
Johnstown, PA

Penn State Technology Development Center
Malvern, PA

Meadville Industrial Condominium and Business Incubator
Meadville, PA

West Philadelphia Enterprise Center
Philadelphia, PA

Moshannon Valley Enterprise Center Incubator
Philipsburgh, PA

Ridgway Multi-Tenant Complex
Ridgway, PA

Wexford I
Wexford, PA

Wexford II
Wexford, PA

Chattanooga/Hamilton County Business Development Center
Chattanooga, TN

Matrix, Inc.
Knoxville, TN

Nashville Business Incubation Center
Nashville, TN

Tennessee Innovation Center, Inc.
Oak Ridge, TN

Southeast Business Incubator
Austin, TX

Austin Technology Incubator
Austin, TX

Dallas Business Incubator
Dallas, TX

Dallas County Community College District Business Incubation Center
Dallas, TX

Free Enterprise Center
Stafford, TX

Bennington County Industrial Corporation
North Bennington, VT

University Business Innovation Center
Charlottesville, VA

Lynchburg Business Development Center
Lynchburg, VA

Port of Kennewick Development Program
Kennewick, WA

Port of Benton Development Building
Richland, WA

Tri Cities Enterprise Center
Richland, WA

Square One Incubator
Tumwater, WA

Charleston Enterprise Center
Charleston, WV

Fox Valley Technical College
D.J. Bordini Technology Innovation Center
Appleton, WI

Chippewa Valley Incubation Center, Inc.
Eau Claire, WI

ADVOCAP Business Center
Fond Du Lac, WI and Osh Kosh, WI

Coulee Region Business Center, Inc.
LaCrosse, WI

University of Wisconsin-Stout Incubator Service
Menomonie, WI

Milwaukee Business Ventures, Inc.
Milwaukee, WI

The CAPsell Center
Wautoma, WI

Business Development Center
West Allis, WI

Business Innovation Center
Edmonton, Alberta

Greater Trail Business Development Center
Trail, B.C.

Incutech Brunswick, Inc.
Fredericton, N.B.

Enterprise Development Centre
Port aux Basques, Newfoundland

London Community Small Business Centre, Inc.
London, Ontario

York Business Opportunities Centre
Toronto, Ontario